

# Investigating Online Auctions, Review Sites and Classifieds for Compliance

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# Allen Atamer

- MIT graduate 2001 (S.M.)
- 10 years experience in artificial intelligence, text mining and software engineering
- 1 US and 1 Canadian patent in my name
- 8 years in the aerospace industry
- Personal motivation: 2 daughters



# Online Classifieds & Ecommerce

- Cost-effective way sellers reach many people with their products/services
- Many items/ads to investigate – sometimes thousands per day
- Anonymous nature of listings, limited validation of personal information
- the Law supports the website hosts\*
- Amazon, eBay lobbied hard for tax moratorium

\* S230 of the Communications Decency Act  
1996

# Illegal Activity

- Unlicensed Auto sales (Curbstoning)
- Underground Economy
  - Contractors / Service Oriented Businesses
  - Under- or non-reporting of taxes
  - E-Fencing stolen merchandise
- Review Sites for tax compliance
- Child prostitution
- Weed / Drugs
- Fraud / 419 scam (King of Nigeria)

# Auto Fraud

- Curbstoners – sell salvage title / grey titling vehicles
- list bogus private sale ads in CL: “for sale by owner”

EXAMPLE:

416-527-4626	2010-10-25	1998 VW BEETLE TDI DIESEL
	2010-10-10	2000 VW JETTA GLS "NEEDS BODY WORK"
	2010-10-23	2003 Honda Accord, Auto, One owner, No accident, Private Sale

# Craigslist



Read many ads on one page from you search  
Limit of last 100 that match your search ☹️



Subscribe to this feed using



Live Bookmarks



Always use Live Bookmarks to subscribe to feeds.

Subscribe Now

## craigslist toronto | all services search "hvac"

### [REFRIGERATION - HEATING - AIR CONDITIONING \(GTA 416-770-0474\)](#)

August-12-12 1:52 AM

Check Out: [www.globalheatingcooling.com](http://www.globalheatingcooling.com) Heating - Air Conditioning - Refrigeration - Ventilation American Standard Dealer Residential Services: Air Conditioners - Water Cooled Air Conditioners - Heat Pumps - Furnaces - Electric Furnaces - Ai [...]

### [hvac/r services, no heat, no hot water, gas line hookups, gas line insta \(Brampton, gta, vaughan, pickering, more!\)](#)

August-11-12 3:31 PM

ZEE'S HEATING AND COOLING SERVICES AND INSTALLATIONS (647) 668-0966 ZEE We are licensed, insured, and certified gas technicians, leave your worries to us, we are TSSA (Technical Standards Safety Authority) certified SERVICES WE OFFER!! We service [...]

### [Handy-Tech \(Handyman\) Services & Skilled Support Solution \(Toronto, Etobicoke, Yorks, Mississauga\)](#)

August-11-12 11:59 AM

There are lots you can do; DIY maintenance, basic troubleshooting and more, but if you require assistance or if you may fancy doing something else with your time, why not ask us to do it for you. Get more comfort, lower your maintenance's cost, and r [...]

### [Heating, Air-Conditioning, Gas Line, Ductwork & Appliance Services \(Toronto, Etobicoke, Yorks, Mississauga\)](#)

August-11-12 11:58 AM

Your Professional, Reliable, Cost Effective and Quality Service Provider to: HVAC Services, Gas Fitting, Exhaust System, Ductwork, Appliance Repair and Installation, Handy Tech and Skilled Support Solution. · Sales, Service, Installation of Heating [...]

### [HVAC Express Plumbing Heating Airconditioning \(GTA & Vaughan\)](#)

August-10-12 7:04 AM

# Auto Fraud

- Ideal format below for compiling list of sellers
- Group ads from the same phone numbers together

Phone1	Phone2	Cluster Name	Title	Date Posted	Asking Price	Location	URL
647-869-0641		28	2004 CHEVY CAVALIER GREY 4DR AUTOMATIC ..LOW 100K LOADED!	26-Feb-2011	4000	WESTON ROAD AND STEELES	http://toron
647-869-0641		28	2005 ACURA MDX TOURING BLUE SUNROOF DVD NAV LOADED!	28-Feb-2011	16000	QUEEN AND DIXIE	http://toron
647-869-0641		28	2005 HONDA ACCORD 4DR AUTOMATIC 2.4L 4 CYLINDER SILVER MINT CONDITION!	28-Feb-2011	8000	WESTON ROAD AND STEELES	http://toron
647-869-0641		28	2005 TOYOTA HIGHLANDER SILVER...V6 4X4....MINT CONDITION!	28-Feb-2011	12000	QUEEN AND DIXIE, BRAMPTON	http://toron
647-869-0641		28	2006 CHEVY COBALT SS COUPE RED AUTOMATIC 2.2L AWESOME TO	28-Feb-2011	4500	FINCH AND WESTON ROAD	http://toron
416-524-0714	647-880-5650	19	2006 Nissan Sentra	28-Feb-2011	6800	Toronto	http://toron
416-524-0714	647-880-5650	19	2006 Nissan Sentra-Warranty-Certified-Car Proof Clean	27-Feb-2011	6600	Toronto	http://toron
416-524-0714	647-880-5650	19	2007 Mazda3 GS - Cruise Control	27-Feb-2011	8300		http://toron
416-524-0714	647-880-5650	19	Beige 2006 Mazda5	28-Feb-2011	9800	Toronto	http://toron
416-273-9283		12	2000 HONDA CIVIC SE	27-Feb-2011	3250	MILTON	http://toron
416-273-9283		12	2004 FORD FREESTAR SE	26-Feb-2011	5850	MILTON	http://toron
416-273-9283		12	2005 TOYOTA MATRIX XR	26-Feb-2011	7000	MILTON	http://toron
647-403-1307		13	1994 BMW 318i	27-Feb-2011	2550	Scarborough	http://toron
647-403-1307		13	1998 Honda Civic DX	26-Feb-2011	2400	Scarborough	http://toron
647-403-1307		13	1998 mazda protoge (low milage)	27-Feb-2011	1950	Scarborough	http://toron

# Auto Example: 2005 Honda Accord

**cars + trucks: by-owner | by-dealer | both**

search for:  in:   title only  entire post

price:    has image

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Found: 12 Displaying: 1 - 12

Feb 17 - [\\*\\*2005 HONDA ACCORD SEDAN 2.4L\\*\\*](#) - \$15500 (Mississauga) [pic](#)

Feb 15 - [Certified 2005 Honda Accord](#) - \$9500 (Toronto, GTA) [pic](#)

Feb 15 - [2005 HONDA ACCORD 4DR AUTOMATIC SILVER MINT CONDITION!](#) **\$8000** [pic](#)

Feb 14 - [2005 HONDA ACCORD COUPE EXL](#) - \$9500 (Brampton) [pic](#)

Feb 7 - [2005 BLACK HONDA ACCORD EX-L FOR ONLY](#) - \$9500 (brampton) [pic](#)

Jan 30 - [2005 Honda Accord Coupe EXL](#) - \$10499 (Toronto) [pic](#)

CURBSTONERS TEND TO PUT THEIR PRICES ABOUT \$1-2000 BELOW THE GOING PRICE ...

**2005 HONDA ACCORD 4DR AUTOMATIC SILVER MINT CONDITION!**

Date: 2011-02-15, 10:46AM EST  
Reply to: [sale-4pa9g-2215589940@craigslist.org](mailto:sale-4pa9g-2215589940@craigslist.org) [\[Errors when replying to ads\]](#)

2005 HONDA ACCORD 4DR AUTOMATIC 2.4 L 4 CYLINDER SILVER MINT CONDITION!  
BEAUTIFUL CAR ..FULLY POWERED 160K....  
SAFETY AND EMISSION TESTED ..ONLY \$8000!!  
**CALL ANYTIME!**  
647 869 0641

it's NOT ok to contact this poster with services or other commercial interests



**cars + trucks: by-owner | by-dealer | both**

search for:  in:   title only  entire post

price:    has image

---

Found: 11 Displaying: 1 - 11

Feb 15 - [2005 HONDA ACCORD 4DR AUTOMATIC SILVER MINT CONDITION!](#) - \$8000 [pic](#)

Feb 13 - [2005 TOYOTA HIGHLANDER SILVER...V6 4X4....MINT CONDITION!](#) - \$12000 (BRAMPTON) [pic](#)

Feb 13 - [2005 INFINITI G35X BLACK PREMIUM..SUNROOF LEATHER MINT CONDITION!](#) - \$13900 (HAMILTON) [pic](#)

Feb 11 - [2008 HONDA ACCORD EX-L V6 GREY 4DR LOW 17,700KMS LIKE NEW!](#) - \$17250 (BRAMPTON) [pic](#)

Feb 6 - [2005 INFINITI G35X BLACK PREMIUM..SUNROOF LEATHER MINT CONDITION!](#) - \$14500 (BURLINGTON HAMILTON AREA) [pic](#)

THE RESULT?  
TOO GOOD TO BE TRUE!  
(TGTBT)

# Phone Number Reverse Lookup

- Google reverse phone number
  - Some good stuff
  - Page 2, 3, 4 more spammy as you go along
- Paid Reverse Phone Number Search tools
  - Approx. 20-30% effective for name/address
  - Approx. 80-90% effective for name only
  - Each provider has a different set of data it pulls from (cellphone companies, sweepstakes, free t-shirt offers, etc.)

# eBay – Opportunities

- \$11.6 Bn in revenues\*
  - Extrapolate to over \$200 Bn, assuming 5% avg. commission
- 40-80% of transactions are published as part of the seller / buyer feedback including amount paid, date, item, buyer account, seller account
- Great tool to compare against official filings
  - Brick and mortar vs. e-commerce sales taxes
  - Identify non or under-reporting of individuals or corporations
  - Identify non or under-reporting of use taxes

\* Wikipedia

# eBay - Challenges

- Against eBay policy to disclose name, address, email, or phone number for eBay account without subpoena
- 90 day limit to see detailed auction data
- eBay + Amazon lobbied for a tax moratorium on sales tax e-commerce and won
- Too costly to pursue everyone, so how to prioritize?
  - Distinguish “mom & pop” stores vs. professionals?

# eBay – Identifying accounts

- GOALS:
  - Establish physical nexus with the state
  - Establish total sales in enforcement period (e.g. past 3 years)
  - Establish real identity (full name, address, business name, phone number)
- Use Internet to your advantage
  - MyWorld Page of eBay user
  - User's eBay store
  - Google search account
  - Whois query on username
  - (rare) feedback text – first name?

# eBay Finding API

- Access eBay items for sale with SOAP
- XML request/response format
- Software Dev. Kit (SDK) available in both Java and .NET
- eBay Developer account tied to an existing eBay account required
- Good documentation, tutorials
- Limit of 5,000 API requests per day ☹
- Feedback still needs to be scraped separately ☹

# 1099K - Silver bullet?

- Payment settlement entities and third-party payment handlers (e.g. Paypal) required to disclose e-commerce income for 2011 through 1099K with IRS
- IRS will share 2011 data with state tax authorities (IRMF extract) approx. April 2013\*
- Tax authorities have an easy view into online sales and e-commerce
- \$20,000 **and** 200 transaction minimum cutoff on required sellers

# The “Game”

- Career Criminals adapt when they feel the heat
  - Move their ads to another website
  - Obfuscate phone number in ad
  - Change cell numbers often
  - Close account and recreate new one
- Meeting the challenge
  - Analyze all major classifieds like Craigslist, AutoTrader, Kijiji, Backpage, (more coming)...
  - Identifying an MO to the ad, or the auction

# Find the phone number

## 1959 karman Ghia Vw volkswagen - \$1100 (Arlington)

[prohibited](#)

[spam/overpost](#)

[best of craigslist](#)

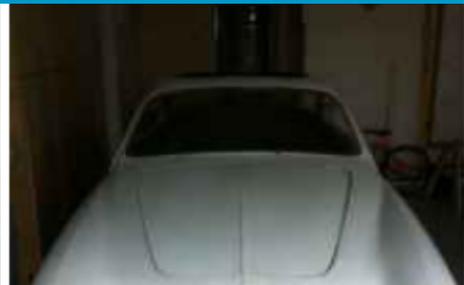
Date: 2011-03-29, 9:44PM PDT

Reply to: [sale-khreu-2294590919@craigslist.org](mailto:sale-khreu-2294590919@craigslist.org) [\[Errors when replying to ads?\]](#)

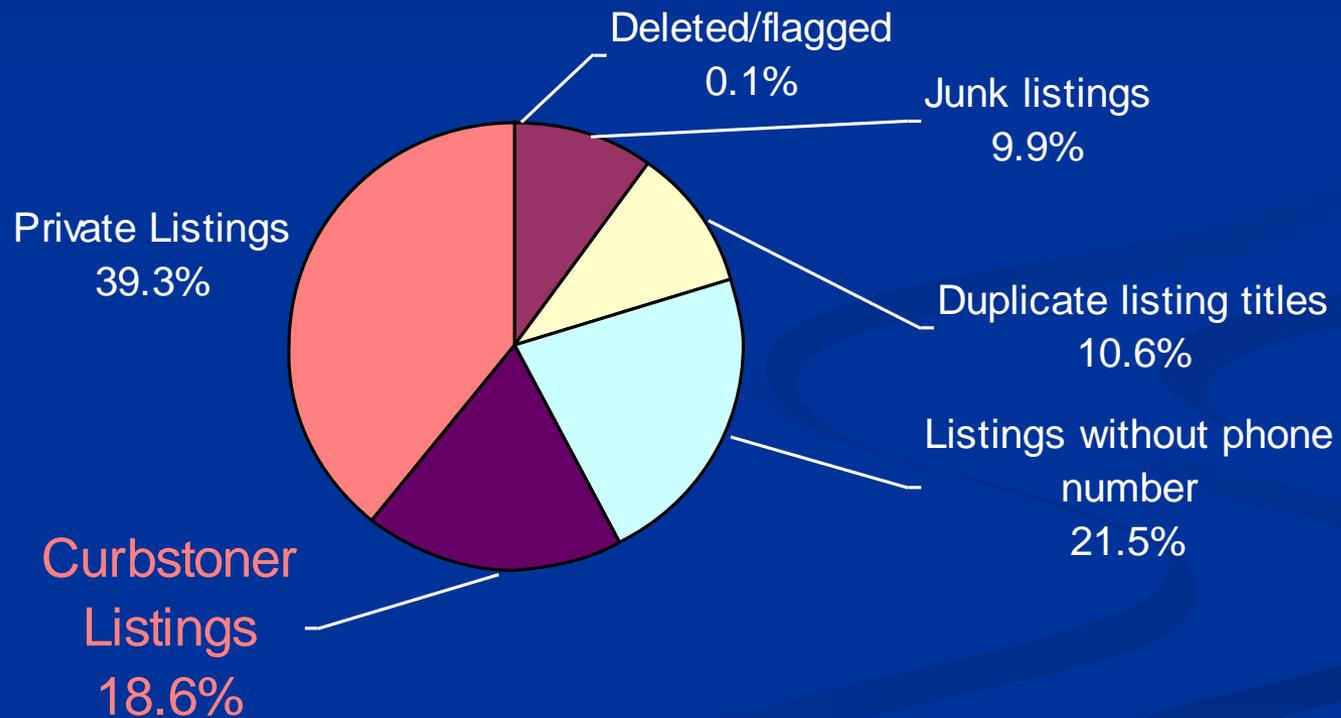
59 Karman Ghia Volkswagen- Cash or want to trade for pre 68 bug. Will consider 68 and newer. A very complete car in project stage. I have all parts except for bumpers. It has complete 36hp engine that runs well as of September of 2010 before I began dismantling the car. The motor is still in tact and all tin is included. It has been inside my garage and not in the weather. The floor pans are rusted through but only requires back quarters replaced not halves. I have original hub caps with Wolfsburg crests. Original Wolfsburg crest batwing steering wheel and horn crest. Original Batwing Karmann emblem and glass marker lenses. No title. Chasis and pan numbers match and indicate manufacturer date at November of 59. All glass is with it. I am excited for what you got in trade. Nine one six.509.2165 I am in Arlington Wa. Please e mail for more pictures or info.

- Location: Arlington
- it's NOT ok to contact this poster with services or other

Obfuscated numbers foil the Reverse  
Lookup Search  
Sometimes searching last 4 digits work



# Breakdown of postings



# Audit Uncertainty / Risk

- Onus on the audit department to match up SSN, real name, address with eBay account data
- Uncertainty in
  - actual vs. published transactions
  - percentage under- or non-reporting in each category
    - Car dealers vs. Baby furniture vs. software
- Time / cost to subpoena?
  - eBay Canada vs Canada Revenue Agency (Sep.'07-Nov.'08)
  - ANSWER: Third parties sell transactional data for a fee

# Review Websites

Site (Rank*)	Categories	Good for:
AngiesList (612)	Contractors Doctors	Income Tax Sales Tax
ServiceMagic (938) YellowPages (134)	Service-oriented	Income Tax Sales Tax
Yelp (48) Foursquare (794)	Restaurants	Income Tax, Liquor Tax, Sales Tax
Vrbo.com (565) Airbnb.com (875)	Vacation Rentals / B&B	Income Tax, Tourism Tax

\*Source: Alexa.com rankings for USA

# AngiesList.com

- “Refined, vetted Reviews” by homeowners
- Each contractor has reviews
- Each review has a spot for project cost
- Must pay for access, extra \$ for each city/region



The screenshot shows a report from Angie's List. At the top, there are links for "View All Reports" and "Share with a Friend". Below that, it indicates "3 of 24" reports and a "REPORT DATE: JANUARY 30, 2010". The report details include:

Work Done:	Yes
Work Completed Date:	November 16, 2009
Hire Again:	Yes
Approximate Cost:	\$2,315.00
Home Build Year:	1987
Description Of Work:	They painted the exterior of our house a lot of wood trim on the front and the rest
Member Comments:	They were very professional, fast and n... doing due to the rain and damp weathe

A red box highlights the "Approximate Cost" field, which contains the value "\$2,315.00". A red arrow points to the right side of this box.

# Yelp.com

- Estimate sales based on comparable businesses in the neighbourhood based on
  - Hours of operation (B/L/D/L8, Wkdy, Wknd)
  - Price Range (from \$ to \$\$\$\$)
  - Accepts credit cards (Y/N)
  - number of (good) reviews
  - # Checkins → repeat business
  - (rarely) Review text

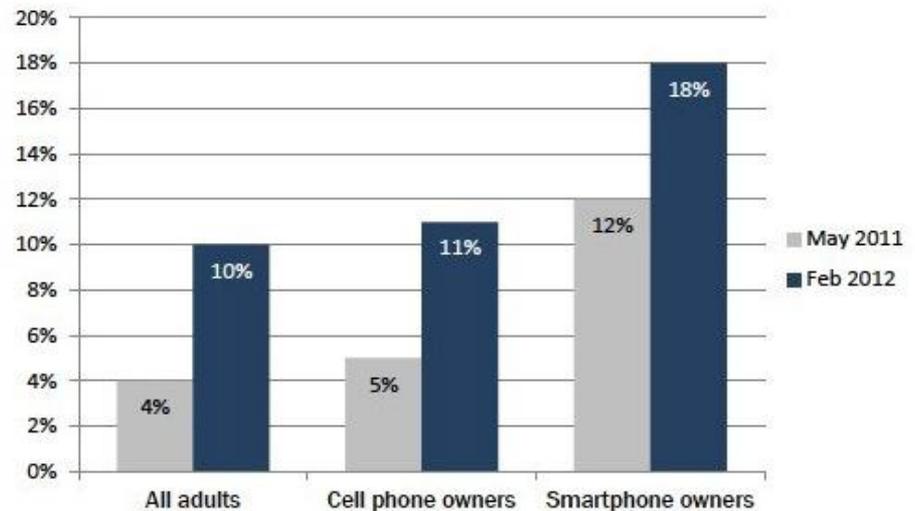
# Foursquare.com

- Social networking for restaurants / events
- People can “check in” to indicate they are at a restaurant / event
- Friends can see where they are and join them
- Opportunity for revenue estimation



## One in ten adults use geosocial or “check in” services

Do you ever use your cell phone to use a service such as Foursquare or Gowalla to “check in” to certain locations or to share your location with your friends? (Asked of adults 18+)

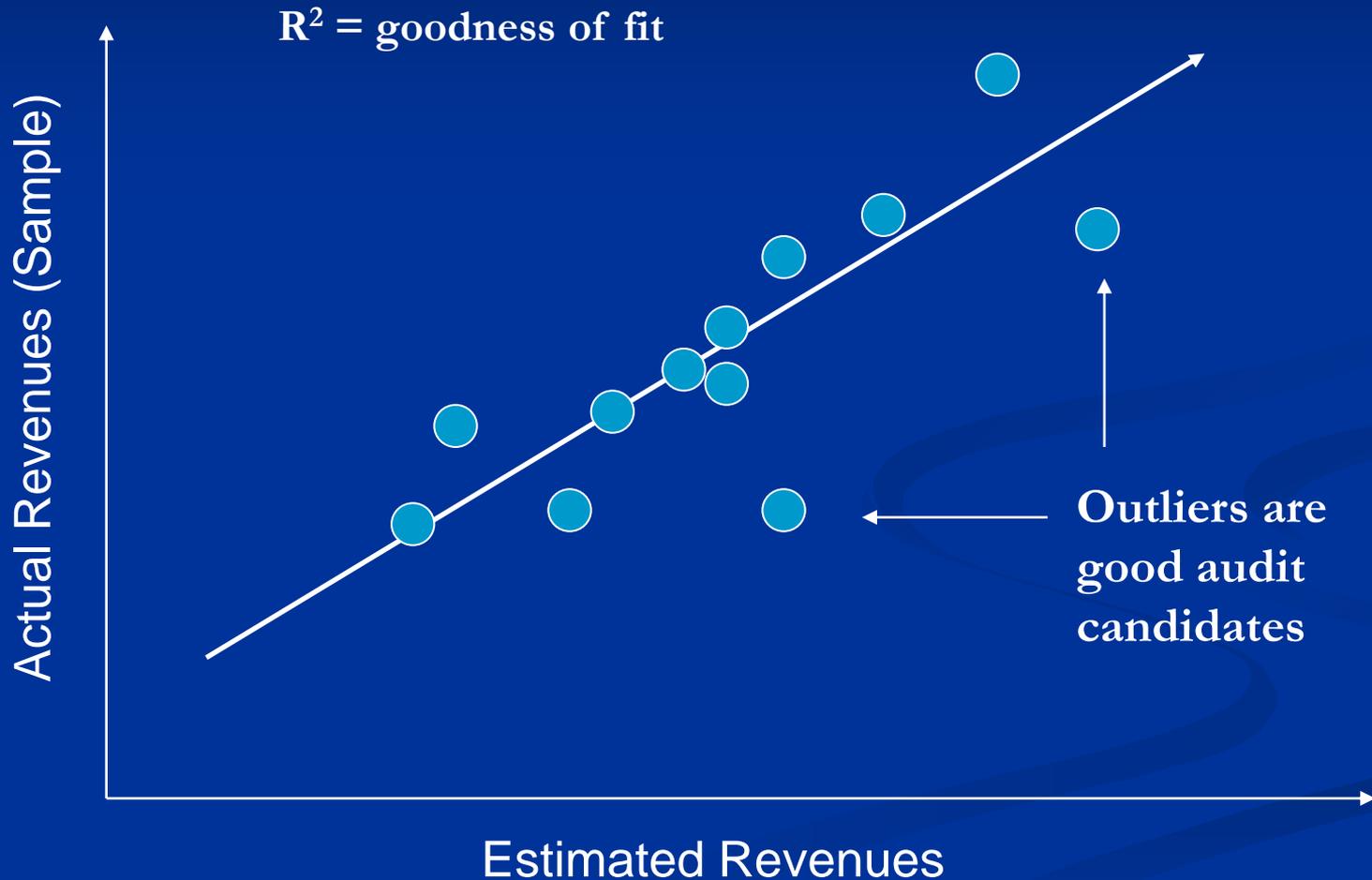


Source: Pew Research Center's Internet & American Life Project April 26–May 22, 2011 and January 20–February 19, 2012 tracking surveys. For 2011 data, n=2,277 adults ages 18 and older, including 755 interviews conducted on respondent's cell phone. For 2012 data, n=2,253 adults and survey includes 901 cell phone interviews. Both 2011 and 2012 data include Spanish-language interviews.

# Estimate Revenues

- $Rev\$ = (N_c * G_c + N_r * G_r) * M\$$ , where
  - $N_c$  = number of checkins
  - $G_c$  = gain from checkins (friends that joined but never checked in)
  - $N_r$  = number of (good) reviews
  - $G_r$  = gain from reviews (people who were influenced by the review and also went)
  - $M\$$  = average price per person
- Gains are based on an empirical observation  
# Readers > # Checkins > # Reviews

# Basic Idea



# Lead Identification Services

- Top Sellers in your state/region (sales & income tax avoidance)
- Top Buyers in your state/region (use tax avoidance)
- Web scraping transactions, checkins, reviews
- Background Checking online identities (establish physical nexus, real names, addresses)

# Thank You!

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